

### Abstract of the Disclosure

An engine control system provides a gas concentration detection output irrespective of variation in product or change due to passage of time using an on-vehicle exhaust gas sensor. An exhaust  
5 gas sensor 107 and an electric heater 119 are connected to a microprocessor 120a, and an oxygen-concentration detection output  $I_p$  of exhaust gas, a calibration signal  $V_c$  and an internal resistance detection signal  $V_r$  are inputted through A/D converter 125. A  
10 program memory 121a stores standard characteristic data of the exhaust gas sensor 107. An atmospheric air oxygen-concentration detection output  $I_{pO}$  under fuel-cut drive is measured and monitored. The electric heater 119 controls temperature so that the output coincides with the stored value. Current internal resistance of the  
15 exhaust gas sensor 107 is read and stored as target resistance. In normal driving, the electric heater 119 is controlled so that the internal resistance becomes the target resistance.